

as a single client mode; 2) delete the transition ID to the transition table; and 3) start the “am I alone” pings at regular intervals.

[0046] The transition ID in the transition table indicates another user has joined the coauthoring session and is in transition back to multi-user authoring. When the system transitions back to one client editing, that client starts sending the “am I alone” pings. The “am I alone” pings returned to the client indicate the client is alone until another client puts the transition ID back in the transition table.

[0047] Once computing device 510 pings storage device 120 in stage 640, method 600 may continue to stage 650 where computing device 510 may refresh cache 526.

[0048] For example, computing device 510 may refresh cache 526 by updating the transition table stored in cache 526. For instance updating the transition table may include pinging cache 526 to check for the presence of the transition ID in cache 526. When the transition ID is not present in cache 526, a determination may be made to see if cache 526 has been refreshed within a predetermined time interval. When cache 526 has been refreshed within the predetermined time interval, a response to the ping may be sent from cache 526. When cache 526 has not been refreshed within the predetermined time interval, the transition table corresponding to the document's content database may be fetched. Once computing device 510 has refresh cache 526 in stage 650, method 600 may then end at stage 660.

[0049] FIG. 7 is a flow chart showing example stages of subroutine 630. Subroutine 630 begins at starting block 705 and proceeds to stage 710 where computing device 510 may determine if the document is already being used in the multi-client mode. For example, computing device 510 may determine if the document is in multi-client mode by checking a database. If computing device 510 determines the document is not in multi-client mode in stage 710, subroutine 630 may proceed to stage 715 where computing device 510 switch from a single-client mode to a multi-client mode.

[0050] For example, switching from single-client mode to multi-client mode may be initiated by a second client attempting to take another short-term lock on the document and seeing that that the client has already received the document. Switching to multi-client mode may include computing device 510 receiving the document and transition ID at cache 526. In this instance computing device 510 may actually be a second client computing device. After receiving the transition ID, computing device 510 may write the transition ID to the transition table, and write to the database information indicating the second client has joined the editing session and is now working on the document.

[0051] If computing device 510 determines the document is in multi-client mode in stage 710, subroutine 630 may continue to stage 720 where computing device 510 may add the client as the “nth” client. For example, adding the “nth” client may include computing device 510 receiving the document and transition ID, and writing to the database information indicating the “nth” client has joined the editing session.

[0052] From stage 715 where computing device 510 switches from single-client mode to multi-client mode or stage 720 where computing device 510 adds the “nth” client, subroutine 630 may advance to stage 730 where computing device 510 may return to stage 640 (FIG. 6).

[0053] Reference may be made throughout this specification to “one embodiment,” “an embodiment,” “embodiments,” “an aspect,” or “aspects” meaning that a particular

described feature, structure, or characteristic may be included in at least one embodiment of the present disclosure. Thus, usage of such phrases may refer to more than just one embodiment or aspect. In addition, the described features, structures, or characteristics may be combined in any suitable manner in one or more embodiments or aspects. Furthermore, reference to a single item may mean a single item or a plurality of items, just as reference to a plurality of items may mean a single item. Moreover, use of the term “and” when incorporated into a list is intended to imply that all the elements of the list, a single item of the list, or any combination of items in the list has been contemplated.

[0054] Embodiments of the disclosure may be implemented as a computer process (method), a computing system, or as an article of manufacture, such as a computer program product or computer readable media. The processes (programs) can be implemented in any number of ways, including the structures described in this document. One such way is by machine operations, of devices of the type described in this document. Another optional way is for one or more of the individual operations of the methods to be performed on a computing device in conjunction with one or more human operators performing some of the operations. These human operators need not be collocated with each other, but each can be only with a machine that performs a portion of the program.

[0055] The computer program product may be a computer storage media readable by a computer system and encoding a computer program of instructions for executing a computer process. The computer program product may also be a propagated signal on a carrier readable by a computing system and encoding a computer program of instructions for executing a computer process. The term computer readable media as used herein includes both storage media and communication media.

[0056] Those skilled in the art will appreciate that the disclosure may be practiced with other computer system configurations, including hand-held devices, multiprocessor systems, microprocessor-based or programmable consumer electronics, minicomputers, mainframe computers, and the like. The disclosure may also be practiced in distributed computing environments where tasks are performed by remote processing devices that are linked through a communications network. In a distributed computing environment, program modules may be located in both local and remote memory storage devices. Generally, program modules include routines, programs, components, data structures, and other types of structures that perform particular tasks or implement particular abstract data types.

What is claimed is:

1. A method for retrieval of presence metadata, the method comprising:

receiving a request from a first client to edit a document file;  
sending short-term check out metadata to the first client to begin an editing session; and  
writing the transition ID to a transition table stored in a cache, wherein the presence of another transition ID in the cache indicates that a document has switched from a single-client mode to a multi-client mode.

2. The method of claim 1, further comprising receiving a ping from the first client to determine if the transition ID is in the cache.